

# *U.S. Antarctic Marine Living Resources Program*

## *2012-2013 Weekly Field Reports*

### *Cape Shirreff, Livingston Island*

Volume 15  
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#### Science Report

##### Seabirds

1. We conducted the annual chinstrap chick census on 11 February, approximately one week after the peak crèche date. We counted 3064 chicks, 12% lower than last year's count of 3483 and 47.8% lower than the previous 16 year mean of 5864. This year there was an average of 0.73 chicks per.
2. We have finished monitoring known-age penguin nests. Fifteen chicks were crèched from the 38 known-age gentoo penguin nests, representing an average of 0.39 chicks per nesting pair. In total, 66% of all known-age gentoo nests failed.
3. On 11 February we deployed five satellite transmitters and five Time Depth Recorders (TDRs) on chinstrap penguins that have crèched chicks. We will recover these instruments after one week of deployment. This past week we recovered all but one satellite transmitter and one TDR of the nine instruments that were deployed on gentoo penguins last week.
4. We finished collecting penguin diet samples this past week. This year we collected a total of 40 samples from chinstrap penguins and 20 gentoos. 97.5% of the chinstrap diets have consisted entirely of Antarctic krill (*Euphausia superba*). Only one chinstrap diet sample had weighable fish, representing less than 1% of the sample by mass. Otoliths from *Gymnoscopus nicholsi*, *Electrona antarctica*, and an unknown species were found in 10% of the chinstrap diet samples but they contained no other evidence of fish. Of the 20 gentoo penguin diets, 15 have contained fish, accounting for 31% of the total weight of gentoo penguin samples. The majority of the otoliths found in the last five gentoo samples were from *Trematomus newnesii* and from *Lepidonotothen kempi*. Average krill length for gentoo diets was 40.68 mm and average krill length for chinstrap diets was 39.4 mm. The sex ratio of krill in the diets of both gentoos and chinstraps was similar with 47% male, 32% female with 21% juvenile krill of undetermined sex.
5. Of the 17 brown skua territories that are regularly monitored, seven of these pairs are still brooding one chick and 10 have failed.



Pinnipeds

6. Two more fur seal pups of the original 30 CCAMLR attendance study females have died, which brings the total to 24 females who have now lost their pup.
7. Trip durations decreased again this week, though the sample size is now quite small due to pup losses. The following are mean values for trip durations of all females with living pups by calendar week:

Week beginning:	Mean Trip Duration (days)	S.D.	N (completed trips by week)
12/2/2012	4.30	1.88	6
12/9/2012	3.98	2.11	26
12/16/2012	4.80	2.05	26
12/23/2012	4.02	1.13	31
12/30/2012	4.51	1.22	35
01/06/2013	5.02	1.65	24
01/13/2013	4.71	1.18	21
01/20/2013	4.99	1.00	16
01/27/2013	5.07	1.24	12
02/03/2013	4.08	0.76	10
02/10/2013	3.24	1.61	5

8. We continue to monitor our adult tagged female population and mother pup pairs to get a measure of reproductive success and loss of pups due to leopard seal predation. Our current estimate for pup loss to leopard seal predation as of 18 February has increased to 63.2%.
9. On February 16 we conducted our fourth and final sample of CCAMLR pup weights. The mean mass was 14.3 kg (s.d. = 0.20, n = 53) for males and, 12.2 (s.d. = 0.14, n = 50) for females.
10. Systematic surveys of defined areas of the Cape for the 500 per annum fur seals tagged as pups continued this week. This will give us a measure of tags sighted per unit of effort for different cohorts and for different areas of the Cape. Return percentages of animals from recent cohorts are as follows: 2008/09 (0.8%), 2009/10 (4%), 2010/11 (1.6%), 2011/12 (1.25%).
11. We have flipper tagged 199 fur seal pups for future demographic studies and cohort success. Twenty-one of these were the pups of tagged adult females. Our remaining 201 tags for the year will be deployed over the next week.



12. This week we collected our ninth fur seal diet sample of ten scats. To date 90 scats have been collected and 55 have been processed.
13. On February 15 we completed our thirteenth weekly Cape-wide phocid census. This week we saw a decrease in the number of all species. We counted 112 southern elephant seals, seven Weddell seals, and 13 leopard seals.
14. As of 18 February we have recorded 313 sightings of 32 tagged leopard seals. We have recorded an additional 79 sightings of untagged or otherwise unidentified seals which have been added to our photo-identification database. Twenty-one of the 32 tagged seals returned from previous years and the other eleven we tagged this year.
15. We completed four more leopard seal captures this week. To date six GPS location instruments have been recovered from leopard seals, and another deployed. These instruments together with stable isotope analysis of blood will help us understand leopard seal foraging behavior and quantify their impact on Antarctic fur seals and penguins. To date we have successfully performed sixteen leopard seal captures on eleven animals.
16. During the 2011/12 field season 10 GLS tags were deployed on leopard seals in order to extend our understanding of over-winter leopard seal movements. As of today, five GLS tags have been recovered.
17. Rain and high winds limited our abilities this week, but we continued to operate the APH-22 hexacopter in order to study nutritive condition in leopard seals and photograph penguin colonies and fur seal beaches. This week we completed coverage of all fur seal study beaches, continued our data analysis of images, and refined our technical knowledge of the hexacopter system.

## Weather

18. The sun continues to hide from us for the month of February. This week winds averaged 8.0 mph with a maximum of 40 mph. The predominant wind directions were east (44.7%), west (21.5%) and north (21.0%). The average temperature was  $1.2^{\circ}\text{C}$  with a high of  $4.7^{\circ}\text{C}$  and a low of  $-0.9^{\circ}\text{C}$ . Mean daily solar radiation was  $7,319\text{ Wm}^2$ . Sunrise is now at 5:32 AM (CLST) and sunset is at 8:50 PM (CLST).
19. We would like to thank the Ocean Prediction Center (OPC), Ocean Forecast Branch of NOAA's National Weather Service (NWS) for providing valuable and very accurate weather forecasts which have been used to plan our work efficiently and keep our team safe.



## Camp

20. Preparations have begun in earnest for closing the US AMLR field camp for over-winter. Inventories of all supplies, food, and gear have begun, machinery is being serviced and gear and trash are being organized for removal from the island.
21. This week construction and installation of three new window covers, and one new door cover were completed. The main kitchen stove was cleaned and repaired; both front burners were replaced. The wind generator was fixed just in time for it to be taken down for the season. It will be sent north for service.



Presented by Doug Krause and Jefferson Hinke, with assistance from Mike Goebel, Nicole Cook, Jay Wright, Melany Zimmerman, and Michelle Goh at the Cape Shirreff Field Camp, Livingston Island, South Shetland Islands, Antarctica

